author index

Abegaz, B. M. 323
Abou-Zaid, M. M. 237
Abrahamson, W. G. 615
Alpinar, K. 439
Andersen, R. A. 143
Anderson, D. M. W. 447
Apfelbaum, L. I. 467
Armstrong, J. A. 171, 698
Aron, S. 271
Averett, J. E. 87

Bachmann, P. 595
Bagnères, A.-G. 25
Bain, J. F. 665
Barghi, N. 157
Bergquist, P. L. 117
Bergquist, P. R. 17, 117, 289
Bergström, G. 623
Biasiolo, A. 189
Birt, T. P. 651
Bittrich, V. 319
Blunt, J. W. 35
Bohlmann, F. 440
Bohm, B. A. 677
Bradleigh Vinson, S. 453
Brandl, R. 549
Brederode, J. van 559
Bullock, R. C. 263
Butler, T. L. 305

Cambie, R. C. 17, 289
Capanna, E. 461
Castillo, M. 53
Chamy, M. C. 167
Cheng Chang 599
Christophersen, C. 223
Chuah, C. H. 35
Clement, J.-L. 25
Cole, M. D. 333
Comparini, A. 189
Cool, L. G. 147, 421
Cross, M. G. 395
Crowe, T. M. 213
Czygan, F.-C. 253

Daleffe, L. E. 467
Daniere, C. 577, 587
Das, J. R. 207
Davidson, W. S. 651
Davis, B. J. 277
De Mello-Silva, R. 241
Dettner, K. 291
Di Fabio, A. 167

Dillinger, R. E., Jr 651
Dimmick, W. W. 413
Djerassi, C. 143
Do Carmo E. Amaral, M. 319
Dominguez, X. A. 523
Duerholt-Oliveira, I. 241
Dunton, R. F. 453

Eber, S. 549
English, S. 507
Espelie, K. E. 127
Espinosa-García, F. J. 629, 643

Facemire, C. F. 541
Faini, F. 53
Federici, B. A. 599
Fellows, L. E. 333, 441
Fiasson, J. L. 157
Filippucci, M. G. 461
Frutos, R. 599
Fusco, G. 13, 213

Garbarino, J. A. 167
Gil, M. I. 697
Gill, S. S. 599
Gillespie, R. B. 541
Giner, J.-L. 143
Gluchoff-Fiasson, K. 157
Goh, S. H. 35
Gonnet, J. F. 577, 587
Gooday, G. W. 395
Gray, A. I. 91, 171, 698
Green, J. M. 651
Greenaway, W. 507
Greinwald, R. 253, 595
Grenz, C. 5
Groth, I. 623
Gümüs, S. 439
Guttman, S. I. 541

Hammen, C. S. 263
Harborne, J. B. 81, 483, 529
Harley, R. M. 333
Hartley, T. G. 91, 171
Heinze, J. 195
Hellwig, F. 53
Herrera, Y. 665
Hickman, G. C. 461
Hillman, K. 395
Hirano, S. 379
Hougaard, L. 223
Huang, S. 87
Hurka, H. 47

Imabayashi, H. 105
Ingham, J. L. 497

Jeuniaux, Ch. 347, 385

Kakes, P. 519
Karuso, P. 17
Kasahara, S. 105
Kelly-Borges, M. 117
Kernan, M. R. 289
Khan, M. B. 529
King, R. M. 440
Kitaura, S. 379
Kitchen, D. 441
Kite, G. C. 441, 535
Klitgaard, A. 223
Koga, S. 315
Koishibara, Y. 379
Kurokura, H. 105

Labbé, C. 53
Langenheim, J. H. 629, 643
Lauranson, J. 659
Lawson, R. 413
Lebreton, P. 659
Lees, D. C. 441
Lindroth, R. L. 97
Lorenzini, R. 13, 213
Loudenslager, E. J. 183

Majinda, R. 323
Marin, P. D. 697
Martinez-Laborde, J. B. 477
Massarini, A. I. 467
May, J. 507
McCrea, K. D. 615
Menezes, N. L. de 483
Millar, J. R. A. 447
Miller, R. F. 401
Miyamoto, S. 371
Moiroud, A. 577, 587
Monteith, G. B. 441
Morgan, E. D. 25
Mugnier, C. 157
Mummenhoff, K. 47
Murae, K. 379

Nakagawa, H. 105
Nevo, E. 461
Nickrent, D. L. 305
Nicoletti, M. 167
Nielsen, P. H. 223
Nishioka, I. 315
Nozzolillo, C. 237

Öksüz, S. 439

Pasha, M. K. 569
Paton, A. J. 333
Payne, J. A. 127
Pelleau, Y. 163, 249
Pellmyr, O. 623
Piovano, M. 167
Poulicek, M. 385
Power, A. B. 421
Prance, G. T. 535
Prosser, J. I. 395

Quader, A. 91, 171

Rafii, Z. A. 147, 163, 249
Raharisololalao, A. 433
Rakoto-Ratsimamanga, A. 433
Randi, E. 13, 213
Rashid, M. A. 698
Rasoanaivo, Ph. 433
Ratha, B. K. 207
Ratsimamanga-Urverg, S. 433
Reig, O. A. 467
Reissenweber, F. 291
Reynolds, T. 535
Rustaiyan, A. 673

Saha, N. 207
Salatino, A. 241
Salatino, M. L. F. 241
Salen-Picard, C. 5
Sanchez-Yelamo, M. D. 477
Sandbrink, J. M. 559
Sarver, S. K. 183
Schilling, E. E. 59
Schoffeniels, E. 345
Scogin, R. 329
Seki, H. 371
Sen, S. P. 569
Serafini, M. 167
Shoyama, Y. 315
Siebenaller, J. F. 277
Siljak-Yakovlev, S. 157
Smith, D. J. 17
Smucker, R. A. 357
Snajberk, K. 147
Sole-Cava, A. 271
Spencer Johnston, J. 453
Spring, O. 59
States, J. S. 111
Stuessy, T. F. 677
Sturm, P. 549

Tadesse, M. 323
Taneko, T. 379
Tang, W. 623
Tanner, M. J. 133
Tendal, O. 223
Thien, L. B. 623
Tomás-Barberán, F. A. 697

Tomás-Lorente, F. 697
Tsuchida, H. 379

Van Wyk, B.-E. 595, 681, 685
Verdoorn, G. H. 595, 681, 685
Vernieri, L. A. 615
Vincent, M. 5
Voss-Foucart, M. F. 347

Wagner, W. L. 87
Waterman, P. G. 91, 171, 698
Webb, M. E. 81
Weiping, W. 447
Weisbrod, A. V. 97
Weldon, P. J. 133
Whatley, F. R. 507
Whitwell, A. J. 615
Williams, C. A. 483
Wilson, R. R., Jr 277
Witte, L. 253
Wollenweber, E. 673
Wray, V. 253
Wünsche, L. 143

Yamamoto, H. 371
Yamamoto, T. 379

Zavarin, E. 147, 163, 249, 421
Zdero, C. 523
Zhang, X. 111

subject index

Aaptamine, isolation from a *Suberites* sp 289
Acacia senegal, composition of gum from trees growing in Niger 447
Acetophenones, chemosystematics of in *Acradenia* and the Rutaceae 171
Achillea, identification of sesquiterpenes and flavonoids in three sp of 439
Acradenia, chemosystematics of acetophenones from two sp of 171
Alkaloids,
quinolizidine and dipiperidine, patterns in *Cytisophyllum sessilifolium* 253
isolation of aaptamine from *Suberites* sp 289
protoberberine, from three sp of *Burasaia* from Madagascar 433
glycosidase inhibitors in uraniine moths 441
effects of mechanical and insect damage on content of in *Atropa acuminata* 529
taxonomic significance of in *Priestleya* 595
chemotaxonomic significance of in the genus *Robynsiophyton* 681
chemotaxonomy of variation in from the genus *Pearsonia* 685
Alkanes, plasticity of, from foliar epicuticular waxes of 12 sp of Velloziaceae 241
Alnus glutinosa,
individual variation in flavonoids excreted by leaves of 577
geographical variation in flavonoids excreted by leaves of 587
Amblysomus hottentotus, genetic diversity and differentiation of 461
Anthocyanins, floral, chemotaxonomy of in 21 sp of *Erythrina* 329
Ants,
species-specific secretions from Dufour glands of formicine 25
intra- and interspecific variation in defence secretions from Malaysian termites 35
Apis mellifera, allozyme variability of *ligustica* and *carnica* 189
Arceuthobium, genetic relationships among eight populations of two new sp of 305
Asteraceae, composition of exudate flavonoids in three Persian sp of 673
Atropa acuminata,effects of mechanical and insect damage on alkaloidal content of 529
Baccharis, hybridization in the genus: *B. linearis* x *B. macraei* 53
Bacillus thuringiensis, nucleotide sequences of genes encoding for mosquitocidal proteins from . 599
Biodeposition, ecological implications of from cultured mussels in a food web 5
Birds,
biochemical variability in four sp of owl 13
phylogenetic relationships and rates of evolution within the Phasianidae 213
Botryllus niger, genetic evaluation of taxonomic status of 271
Brachiopods, activity of opine oxidoreductases in 263
Bryozoans, activity of opine oxidoreductases in 263
Bud exudates, chemotaxonomy of from *Populus* section *Leuce* 507
Burasaia, alkaloids and diterpenes in three sp from Madagascar 433
Catalpol, chemotaxonomic significance of the iridoid glycoside in *Scutellaria* 333
Catostomus catostomus, postglacial dispersal of in Mackenzie and Yukon drainages 651
Centrospermae, proanthocyanidins from testas of seeds from the 319
Chemosystematics,
of RUBISCO from nine *Lepidium* taxa 47
of leaf flavonoid aglycones in the genus *Vicia* 81
of leaf flavonoids from sp of *Oenothera* sect. *Megapterium* 87
of geographic monoterpene variability in *Pinus albicaulis* 147
of fatty acids in acorns of *Quercus ilex* and *Q. rotundifolia* 163
of iridoids from *Loasa tricolor* 167
of acetophenones in *Acradenia* and the Rutaceae 171
of flavonol glycosides from *Pinus banksiana* 237
of acorn sterols in *Quercus ilex* and *Q. rotundifolia* 249
biochemical, of two varieties of *Botryllus niger* 271
molecular, of LDH-A4 from nine sp of Coryphaenoides 277
of isoflavonoid phytoalexins in *Erythrina* sp 497
of flavonoids of the *Muhlenbergia montana* complex 665
Chemotaxonomy,
of sterol composition in the Porifera 17
of hybridization in the genus *Baccharus* 53
of sesquiterpene lactones from *Helianthus* sect. *Atrorubentes* 59

SUBJECT INDEX

Chemotaxonomy,
of the Hadromerida using 18 S rRNA sequencing 117
of lanosterol pathway in dinoflagellates 143
of flavonoids in eight European sp of *Hypochoeris* 157
of constituents from *Geodia*, *Isops* and *Stryphnus* sp 223
of foliar epicuticular alkanes in sp of Velloziaceae 241
of quinolizidine and dipiperidine alkaloids in *Cytisophyllum sessilifolium* 253
aaptamine, an alkaloid marker for sponges of the order Hadromerida 289
of defensive secretions from 24 Omaliinae and Proteininae sp 291
of flavanol glycosides and isozymes in *Epimedium* sp 315
of sesquiterpene lactones and polyacetylenic thiophenes in *Echinops* sp 323
of floral anthocyanins in the genus *Erythrina* 329
significance of the iridoid glycoside, catalpol, in *Scutellaria* 333
of foliage terpenes in *Fitzroya cupressoides* 421
significance of sesquiterpenes in *Achillea* sp 439
significance of sesquiterpene lactones in *Episcothamnus candelabrum* 440
of *Diplotaxis muralis* and related sp 477
of leaf flavonoids from the Velloziaceae 483
of bud exudates from section *Leuce* poplars 507
of seed proteins from the Cucurbitaceae 569
significance of major alkaloids in *Priestleya* 595
significance of alkaloids in the genus *Robynsiophyton* 681
of alkaloid variation in the genus *Pearsonia* 685
of flavonoids from some Yugoslavian *Micromeria* sp 697
Chitin,
biomass and production in marine environment 347
primary production in biosphere 357
dynamics of in freshwater environment 371
biodegradation of in sand dunes 379
biodegradation of in marine environments 385
mineralization of in an estuarine sediment 395
paleoecology of 401
Coryphaenoides, molecular systematics of LDH-4 from nine sp of 277
Coumarins, 5,7-dioxygenated, from aerial parts of *Geleznowia verrucosa* 698
Crocodiles, TLC analysis of gular and paracloacal gland secretions from 21 sp of 133
Ctenomys, genetic variability in populations of *C. australis* and *C. porteousi* 467
Cucurbitaceae, chemotaxonomy of salt-soluble proteins from seeds of 569
Curculio caryae, characterization of cuticular lipids from 127
Cyanogenesis, microtiterplate method for detection in plant material 519
Cycads, floral volatiles of five sp of in relation to evolution of insect pollination 623
Cytisophyllum sessilifolium, patterns of quinolizidine and dipiperidine alkaloids in 253
Defence secretions, variations in composition of from Malaysian termites 35
Dinoflagellates, cyclization of squalene oxide to lanosterol by 143
Diplotaxis, chemotaxonomy of flavonoids and isozymes in sp of 477
Diterpenes, bitter principles in three sp of *Burasaia* from Madagascar 433
DNA, chloroplast, restriction fragment patterns of *Silene* sect. *Siphonomorpha* 559
Dufour glands, species-specific secretions from formicine ants 25
Echinops, distribution of sesquiterpenes and thiophenes in nine sp of 323
Electrophoresis,
of allozyme polymorphism in four sp of Strigiformes 13
isoelectric focusing of RUBISCO from sp of genus *Lepidum* 47
of enzymes from blue mussels 183
of allozymes from Italian and Carniolan bees 189
of enzymes from socially parasitic ants and their hosts 195
of allozymes from 12 galliform species 213
of 25 enzyme systems from two varieties of *Botryllus niger* 271
of seven enzyme systems from *Arceuthobium siskiyouense* and *A. monticola* 305
of enzyme systems from six sp of *Epimedium* 315
of allozyme products from cyprinid fish 413
of isozyme electromorphs in fire ant populations 453
of isozymes from populations of South African moles 461
of allozymes in populations of two *Ctenomys* sp 467
of seed isozymes from *Diplotaxis* sp 477
of allozymes from *Hydropsyche* and *Notropis* 541

Electrophoresis,
of allozymes from biotypes of *Tephritis bardanae* 549
of restriction fragments from chloroplast DNA of *Silene* 559
of salt-soluble proteins from the Cucurbitaceae 569
of t ransferrin allele frequencies in Canadian longnose suckers 651
Endospermum medullosum, alkaloidal glycosidase inhibitors in 441
Enzymes,
polymorphism of in four sp of Strigiformes 13
isoelectric focusing of RUBISCO from sp of genus *Lepidum* 47
allozyme variability analysis of Italian and Carniolan bees 189
analysis of patterns from socially parasitic ants and their hosts 195
distribution and localization of GDH in *Heteropneustes fossilis* 207
multilocus electrophoresis of allozymes from 12 galliform sp 213
electrophoresis of 25 systems from *Botryllus niger* 271
peptide mapping of LDH-A4 from nine sp of *Coryphaenoides* 277
electrophoresis of seven polymorphic systems of two sp of *Arceuthobium* 305
electrophoresis of from six sp of *Epimedium* 315
parsimony analysis of allozymic data from *Pteronotropis* 413
isozyme electromorphs in fire ant populations 453
allozymic diversity of in South African golden moles 461
allozyme variability in populations of two *Ctenomys* sp 467
chemotaxonomy of seed isozymes from *Diplotaxis* sp 477
cryptic variation in allozymes from *Hydropsyche* and *Notropis* 541
allozyme variation among biotypes of *Tephritis bardanae* 549
Epimedium, flavanol glycosides and isozymes from six sp of 315
Episcothamnus candelabrum, identification of sesquiterpene lactones from 440
Eremitalpa grantii, genetic diversity and differentiation of 461
Erythrina,
chemotaxonomy of floral anthocyanins from 329
chemosystematics of isoflavonoid phytoalexins in sp of 497
Essential oil, effect of leaf phenotypes of redwood on growth of endophytic fungi 629
Eurosta solidaginis, role of phenolics in resistance of goldenrod to 615
Fish,
changes in body constituents of red bream in relation to survival 105
phylogenetic relationships between members of *Pteronotropis* 413
postglacial dispersal of longnose suckers in Canadian drainages 651
Fitzroya cupressoides, variability of foliage terpenes in 421
Flavonoids,
chemosystematics of leaf aglycones in the genus *Vicia* 81
chemosystematics of from leaves of *Oenothera* sect. *Megapterium* 87
analysis of from eight European sp of *Hypochoeris* 157
flavonol glycosides from *Pinus banksiana* 237
identification of in three sp of *Achillea* 439
chemotaxonomy of in *Diplotaxis* and related sp 477
leaf, chemotaxonomy of in the Velloziaceae 483
chemosystematics of isoflavonoid phytoalexins in *Erythrina* sp 497
individual variation in aglycones excreted by leaves of *Alnus glutinosa* 577
geographical variation in aglycones excreted by leaves of *Alnus glutinosa* 587
foliar, variability within and between populations of *Pinus uncinata* 659
chemosystematics of in the *Muhlenbergia montana* complex 665
exudate, composition of in three Persian Asteraceae sp 673
variation in composition of in five sp of *Melampodium* 677
chemotaxonomy of from some Yugoslavian *Micromeria* sp 697
Food web, short, ecological implications of cultured mussel biodeposition in 5
Fungi,
endophytic, effect of leaf essential oil phenotypes of redwood on growth of 629
endophytic, effects of sabinene and γ-terpinene from redwood leaves on growth of 643
Geleznowia verrucosa, 5,7-dioxygenated coumarins from aerial parts of 698
Genes, nucleotide sequences of encoding for mosquitocidal proteins in *Bacillus thuringiensis* . . . 599
Geodia, chemical composition and comparison with *Isops* and *Stryphnus* 223
Gland secretions, qualitative composition of lipids in from 21 sp of crocodiles 133
Glutamate dehydrogenase, distribution and localization in *Heteropneustes fossilis* 207
Gum arabic, composition of from trees growing in Niger 447
Hadromerida, ribosomal RNA sequence comparisons of seven sp from 117

Helianthus, chemotaxonomy of sesquiterpene lactones from sect. *Atrorubentes* 59
Heliothis virescens, effects of damage by on alkaloid content of *Atropa acuminata* 529
Herbivory,
role of terpenes in ponderosa pine to by Abert squirrels 111
effects of insect damage on alkaloid content of *Atropa acuminata* 529
Heteropneustes fossilis, distribution and localization of GDH in 207
Hospitalitermes, variations in defence secretions from five Malaysian sp of 35
Hybridization, in the genus *Baccharus: B. linearis* x *B. macraei* 53
Hydropsyche, cryptic variation in allozyme of larvae from two sp of 541
Hypochoeris, flavonoid analysis of eight European sp of 157
Insects,
secretions from Dufour glands of three sp of formicine ants 25
variations in defence secretions from five sp of Malaysian termites 35
genetic variation in response of gypsy moth to phenolic glycosides 97
characterization of cuticular lipids from the pecan weevil 127
genetic discrimination between Italian and Carniolan bees 189
biochemical relationship between socially parasitic ants and their hosts 195
chemistry of defensive secretions from 24 Omaliinae and Proteininae sp 291
alkaloidal glycosidase inhibitors in uranine moths 441
isozyme electromorphs in fire ant populations 453
effects of damage by a noctuid moth on alkaloid content of *Atropa acuminata* 529
cryptic variation in allozymes from caddisfly larvae 541
genetic and morphological variation among biotypes of *Tephritis* 549
role of phenolics in goldenrod ball gall resistance 615
floral volatiles of cycads in relation to evolution of pollination by 623
Iridoids, structure of three from *Loasa tricolor* 167
Isops, chemical composition and comparison with *Geodia* and *Stryphnus* 223
Lactate dehydrogenase, peptide mapping of A4 from nine sp of *Coryphaenoides* 277
Lepidum, isoelectric focusing analysis of RUBISCO from sp of 47
Lipids,
changes in red bream in relation to experimental stocking 105
characterization of cuticular from the pecan weevil 127
TLC analysis of gland secretions from 21 sp of crocodiles 133
fatty acid composition in acorns from *Quercus ilex* and *Q. rotundifolia* 163
plasticity of alkane profiles from some sp of Velloziaceae 241
Loasa tricolor, structure of three iridoids from 167
Lymantria dispar, genetic response of larvae of to phenolic glycosides 97
Melampodium, flavonoid variation in five sp of 677
Micromeria, chemotaxonomy of flavonoids from Yugoslavian sp of 697
Microtiterplate, method for detection of cyanogenesis in plant material 519
Moles, genetic diversity and differentiation of golden from South Africa 461
Monoterpenes,
role of in selective herbivory of ponderosa pine by Abert squirrels 111
geographical variability of in *Pinus albicaulis* 147
foliage, variability of in *Fitzroya cupressoides* 421
effect of sabinene and γ-terpene on growth of endophytic fungi 643
Muhlenbergia montana, flavonoid content of the complex 665
Mussels, ecological implications of biodeposition from in the Mediterranean 5
Mytilus, genetics of eight Californian populations of 183
Notropis spilopterus, cryptic variation in allozymes from 541
Oenothera, chemosystematics of leaf flavonoids from sect. *Megapterium* 87
Omaliinae, chemistry of defensive secretions from sp of 291
Omphalea queenslandiae, alkaloidal glycosidase inhibitors in 441
Opine oxidoreductases, activity in Lophophorates and molluscs 263
8-Prenylcoumarins, presence in *Pentaceras australis* 91
Pagrus major, changes in body constituents in relation to survival 105
Pearsonia, chemotaxonomy of alkaloid variation in the genus 685
Pentaceras australis, presence of 8-prenylcoumarins in 91
Phenolics,
genetic variation in response of gypsy moth to glycosides from aspen 97
role of in resistance to goldenrod ball gall 615
Phoronids, activity of opine oxidoreductases in 263
Phytoalexins, isoflavonoid, chemosystematics of in *Erythrina* sp 497
Pinus,
role of terpenes and sugars of *P. ponderosa* in selective herbivory by Abert squirrels 111

Pinus,
geographic monoterpene variability in *P. albicaulis* 147
flavonol glycosides from needles of *P. banksiana* 237
variability within and between natural populations of *P. uncinata* 659
Populus,
genetic variation in reponse of gypsy moth to phenolic glycosides from 97
chemotaxonomy of bud exudates from section *Leuce* 507
Porifera,
sterol composition and classification of the 17
18 S rRNA sequence comparisons of the order Hadromerida 117
chemical composition of *Geodia*, *Isops* and *Stryphnus* sp 223
isolation of aaptamine from a *Suberites* sp 289
Priestleya, taxonomic significance of alkaloids in 16 sp of 595
Proanthocyanidins, presence of in seeds of the Centrospermae 319
Proteininae, chemistry of defensive secretions from sp of 291
Proteins,
seed, chemotaxonomy of from the Cucurbitaceae 569
mosquitocidal, nucleotide sequences of genes encoding for in *Bacillus thuringiensis* 599
Pteronotropis, phylogenetic relationships between members of 413
Quercus,
differentiation between *Q. ilex* and *Q. rotundifolia* using acorn fatty acids 163
differentiation between *Q. ilex* and *Q. rotundifolia* based on acorn sterols 249
RNA, ribosomal, comparison of sequences in seven sp of the Hadromerida 117
Robynsiophyton, chemotaxonomic significance of alkaloids in the genus 681
RUBISCO, isoelectric focusing of from sp of genus *Lepidum* 47
Rutaceae, chemosystematic significance of acetophenones in 171
Sciurus aberti, selective herbivory of ponderosa pine by 111
Sclerocarpus sessilifolius, sesquiterpene lactones from 523
Scutellaria, chemotaxonomic significance of catalpol in 333
Seeds, proanthocyanidins in testas from the Centrospermae 319
Sequoia sempervirens,
effect of leaf essential oil phenotypes on growth of endophytic fungi 629
effect of sabinene and γ-terpinene from leaves of on growth of endophytic fungi 643
Sesquiterpenes,
chemotaxonomy of lactones from *Helianthus* sect. *Atrorubentes* 59
distribution of lactones in nine sp of *Echinops* 323
foliage, variability of in *Fitzroya cupressoides* 421
identification of in three sp of *Achillea* 439
identification of lactones in *Episcothamnus candelabrum* 440
lactones from *Sclerocarpus sessilifolius* 523
Silene, restriction fragment patterns of chloroplast DNA from section *Siphonomorpha* 559
Solenopsis invicta, isozyme electromorphs in populations of 453
Solidago altissima, role of phenolics in resistance to ball gall 615
Sterols,
composition and classification of in the Porifera 17
cyclization of squalene oxide by dinoflagellates 143
of acorns from *Quercus ilex* and *Q. rotundifolia* 249
Strigiformes, genetic variability in four sp of 13
Stryphnus, chemical composition and comparison with *Geodia* and *Isops* 223
Tephritis bardanae, genetic and morphological variation among biotypes of 549
Thiopenes, polyacetylenic, distribution of in nine sp of *Echinops* 323
Velloziaceae,
plasticity of alkane profiles from 12 sp of 241
leaf flavonoids as taxonomic markers of 483
Vicia, chemosystematics of leaf flavonoid aglycones in the genus 81
Victoria, potential pollinator-attracting chemicals from fragrance of 535
Volatiles,
esters from fragrance of giant water lily flowers 535
of male cones of cycads in relation to evolution of insect pollination 623

Compiled by Dr Peter J. Holloway, Department of Agricultural Sciences,
University of Bristol, AFRC Institute of Arable Crops Research,
Long Ashton Research Station, Bristol BS18 9AF, UK.

SEND FOR A FREE SAMPLE COPY OF...

SOIL BIOLOGY & BIOCHEMISTRY

Executive Editor: **JOHN S WAID,** *Department of Microbiology, La Trobe University, Bundoora, Victoria 3083, Australia*

This journal is a forum for research on soil organisms, their biochemical activities and their influence on the soil environment and plant growth. It publishes original work on quantitative, analytical and experimental aspects of such research. Soil biology and soil biochemistry cover many scientific disciplines but a single journal brings together the results and views of research workers working in a wide variety of research areas. The scope of this journal is wide and embraces accounts of original research on the biology, ecology and biochemical activities of all forms of life that exist in the soil environment. Some of the subjects which have proved to be prominent are the biological transformations of plant nutrients in soil, nitrogen fixation and denitrification, soil-borne phases of plant parasites, the ecological control of soil-borne pathogens, the influence of pesticides on soil organisms, the biochemistry of pesticide decomposition in soil, microbial aspects of soil pollution, the composition of soil populations, modelling of biological processes in soil systems, the biochemical activities of soil organisms, soil enzymes and the interactions of soil organisms with one another and with plants.

A Selection of Papers

M VAN GESTEL, J N LADD & M AMATO (Australia), Carbon and nitrogen mineralization from two soils of contrasting texture and microaggregate stability: influence of sequential fumigation, drying and storage.

C P CHANWAY & L M NELSON (Canada), Tissue culture bioassay for plant growth promoting rhizobacteria.

A VERMA & M K K PILLAI (India), Bioavailability of soil-bound residues of DDT and HCH to certain plants.

D J ROIGER, S N JEFFERS & R W CALDWELL (USA), Occurrence of *Trichoderma* species in apple orchard and woodland soils.

R LENSI, C LESCURE, C STEINBERG, J-M SAVOIE & G FAURIE (France), Dynamics of residual enzyme activities, denitrification potential, and physico-chemical properties in a y-sterilized soil.

V WOLTERS (Germany), Biological processes in two beech forest soils treated with simulated acid rain—a laboratory experiment with *Isotoma tigrina* (Insecta, Collembola).

Indexed/Abstracted in: *Current Awareness in Biological Sciences (CABS), Curr Cont ASCA, Aqua Abstr, CAB Inter, Cam Sci Abstr, Curr Cont/Agri Bio Env Sci, Environ Per Bibl, Curr Cont Sci Cit Ind, Curr Cont SCISEARCH, BIOSIS Data, Geo Abstr, PASCAL—CNRS Data*

(00332)

Subscription Information

1992: Volume 24 (12 issues)		
Annual subscription (1992)	**£435.00**	**US$695.00**
Two-year rate (1992/93)	**£826.50**	**US$1320.50**

ISSN: 0038-0717

PERGAMON PRESS

Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, UK
Pergamon Press, Inc., 395 Saw Mill River Road, Elmsford, NY 10523, USA

Advertising rate card available on request. Back issues and current subscriptions are also available in microform. Sterling prices quoted are definitive. US dollar prices are quoted for convenience only and are subject to exchange rate fluctuation. Prices shown include postage and insurance and apply worldwide except in Japan.

SEND FOR A FREE SAMPLE COPY OF...

BIOTECHNOLOGY ADVANCES

RESEARCH REVIEWS AND PATENT ABSTRACTS

Executive Editor: **M MOO-YOUNG**, *Institute for Biotechnology Research, University of Waterloo, Ontario N2L 3GI, Canada*
Editors: **J D BU'LOCK**, *Department of Chemistry, University of Manchester, Manchester M13 9PL, UK,* **C L COONEY**, *Department of Chemical Engineering, MIT, Cambridge, MA 02139, USA,* and **B R GLICK**, *Department of Biology, University of Waterloo, Waterloo, Ontario N2L 3GI, Canada*

In this review journal, biotechnology is viewed in a comprehensive context: a multidisciplinary field in which biological systems are developed and/or used for the provision of commercial goods or services. The journal is devoted to all areas of biotechnology including relevant aspects of its disciplinary underpinnings in biology, chemistry and engineering. The primary purpose is to provide regular, rapid but authoritative reviews of important advances in this field for students, researchers, managers and others in industry, government and academia. A timely series of research review papers, patent abstracts and summaries of special government reports on the principles and practices of biotechnology will be covered quarterly. The patent abstracts and government report summaries are selected by the Executive Editor. The review papers are generated from refereed manuscripts.

A Selection of Papers
W R TOLBERT (USA), Manufacture of biopharmaceutical proteins by mammalian cell culture systems.
N F GORDON, C M V MOORE & C L COONEY (USA), An overview of continuous protein purification processes.
S E BUCHOLZ & D E EVELEIGH (USA), Genetic modification of *Zymomonas Mobilis*.
J M LYNCH (UK), Beneficial interactions between microorganisms and roots.
Y MUROOKA (Japan), Genetic design for product formation in recombinant microbes.
J JANECEK & Z DOBROVA (Czechoslovakia), Protein phosphorylation in microorganisms.

A New Patents section is included in this journal.

Indexed/Abstracted in: *Current Advances in Biological Sciences (CABS), Curr Cont ASCA, BIOSIS Database, CAB Inter, Cam Sci Abstr, Curr Biotech Abstr, Chem Abstr Serv, Curr Cont/Agri Bio Env Sci, Curr Cont Ind Sci Rev, Oper Res Manage Sci, Curr Cont Sci Cit Ind. Curr Cont SCISEARCH Data*

(00701)
Subscription Information

1992: Volume 10 (4 issues)		
Annual subscription (1992)	**£175.00**	**US$280.00**
Two-year rate (1992/93)	**£332.50**	**US$532.00**

ISSN: 0734-9750

PERGAMON PRESS

Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, UK
Pergamon Press, Inc., 395 Saw Mill River Road, Elmsford, NY 10523, USA

Advertising rate card available on request. Back issues and current subscriptions are also available in microform. Sterling prices quoted are definitive. US dollar prices are quoted for convenience only and are subject to exchange rate fluctuation. Prices shown include postage and insurance and apply worldwide except in Japan.

SEND FOR A FREE SAMPLE COPY OF...

ENVIRONMENTAL AND EXPERIMENTAL BOTANY

Editor-in-Chief: **MORTON W MILLER**, *Department of Biophysics, The University of Rochester, School of Medicine and Dentistry, Rochester, NY 14642, USA*

Environmental and Experimental Botany publishes research papers on the physical and biological mechanisms that relate to the workings of plant systems and their interaction with the environment.
Experimental areas covered by the journal include: (1) Radiation botany; (2) Photobotany; (3) Chemical mutagenesis; (4) Anatomy and morphology; (5) Cytogenetics and (6) Somatic cell genetics. Environmental areas covered by the journal include: (1) Pollution effects; (2) Plant–soil/water/atmosphere/temperature relations; (3) Phytopathology; (4) Gravitational botany; and (5) Species dispersal and propagation. In addition to research papers, the journal offers review articles commissioned by the editor.

K MENGEL, M TH BREININGER & H J LUTZ (Germany), Effect of simulated acidic fog on carbohydrate leaching, CO_2 assimilation and development of damage symptoms in young spruce trees (*Picea abies* L. Karst).
E MARCO, F MARTINEZ & M I ORUS (Spain), Physiological alterations induced by the organophosphorus insecticide trichlorfon in *Anabaena* PCC 7119 grown with nitrates.
J GARTY & N BINYAMINI (Israel), Establishment of pioneer litho-microorganisms on chalk rocks after a severe forest fire in Israel.
K WIGNARAJAH (USA), Growth response of *Phaseolus vulgaris* to varying salinity regimes.
Y N BEHERA & B BISWAL (India), Leaf senescence in fern: effect of duration, intensity and quality of light.
C P WEST, D M OOSTERHUIS & S D WULLSCHLEGER (USA), Osmotic adjustment in tissues of tall fescue in response to water deficit.
F MURRAY & S WILSON (Australia), Yield responses of soybean, maize, peanut and navy bean exposed to SO_2, HF and their combination.
R D MACLEOD (UK), Lateral root primordium inception in *Zea mays* L.
M GHAZI & G A MYERS (USA), The action of steroidal alkaloids on the ground meristem tissue of the root axis of lettuce seedlings.

Indexed/Abstraced in: *Current Contents, CABS, BIOSIS Database, GEO Abstracts, GEOBASE, PASCAL/CNRS Database, Science Citation Index, INSPEC*
(00267)

Subscription Information

1992: Volume 32 (4 issues)		
Annual rate (1992)	**£230.00**	**US$370.00**
Two-year rate (1992/93)	**£437.00**	**US$703.00**

ISSN: 0098-8472

PERGAMON PRESS

Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, UK
Pergamon Press, Inc., 395 Saw Mill River Road, Elmsford, NY 10523, USA

Advertising rate card available on request. Back issues and current subscriptions are also available in microform. Sterling prices quoted are definitive. US dollar prices are quoted for convenience only and are subject to exchange rate fluctuation. Prices shown include postage and insurance and apply worldwide except in Japan.

SEND FOR A FREE SAMPLE COPY OF...

PHYTOCHEMISTRY

THE INTERNATIONAL JOURNAL OF PLANT BIOCHEMISTRY

The Official Journal of the Phytochemical Society of Europe

Editor-in-Chief: **JEFFREY B HARBORNE,** *Plant Science Laboratories, University of Reading, Whiteknights, Reading RG6 2AS, UK*
Executive Editor: **TERENCE A SMITH,** *Long Ashton Research Station, University of Bristol, Department of Agricultural Sciences, Long Ashton, Bristol BS18 9AF, UK*

Phytochemistry covers research on all aspects of pure and applied plant biochemistry, especially that which leads to a deeper understanding of the factors underlying the growth, development and metabolism of plants and the chemistry of plant constituents.
The journal is divided into eight sections:
* Review Articles
* Growth and Metabolism
* Ecological Biochemistry
* Biosynthesis
* Cell Culture and Biotechnology
* Chemotaxonomy
* Plant Chemistry
* Short Reports

Papers which cut across these sections or which are on another aspect of plant biochemistry may be included.
Books are reviewed regularly.

A Selection of Papers
C H HOCART, D S LETHAM & C W PARKER (Australia), Substituted xanthines and cytokinin analogues as inhibitors of cytokinin *N*-glucosylation.
M TAKECHI & Y TANAKA (Japan), Structure-activity relationships of synthetic diosgenyl monoglycosides.
R A NORTON, D N RADIN & E RODRIGUEZ (USA), Morphogenetic influences on rubber content and molecular weight in tissue cultures of guayule.

Indexed/Abstracted in: *Current Awareness in Biological Sciences (CABS), Curr Cont ASCA, Chem Abstr, BIOSIS Data, PASCAL-CNRS Data, CAB Inter, Cam Sci Abstr, Curr Cont/Agri Bio Env Sci, Curr Cont/Life Sci, Curr Cont Sci Cit Ind, Curr Cont SCISEARCH Data*

(00273)
Subscription Information

1992: Volume 31 (12 issues)		
Annual subscription (1992)	**£760.00**	**US$1215.00**
Two-year rate (1992/93)	**£1444.00**	**US$2308.50**

ISSN: 0031-9422

PERGAMON PRESS

Pergamon Press plc, Headington Hill Hall, Oxford OX3 0BW, UK
Pergamon Press, Inc., 395 Saw Mill River Road, Elmsford, NY 10523, USA

Advertising rate card available on request. Back issues and current subscriptions are also available in microform. Sterling prices quoted are definitive. US dollar prices are quoted for convenience only and are subject to exchange rate fluctuation. Prices shown include postage and insurance and apply worldwide except in Japan.

Printed in England by Grillford Limited, Granby, Milton Keynes